

## REMARKS

Claims 1-26 are pending in the present application. The Examiner has rejected claims 1-26.

Claims 1-26 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,983,082 ("Hilbert") in view of the combination of U.S. Patent No. 5,642,001 ("Miyazaki") and U.S. Patent No. 5,276,912 ("Siwiak"). Applicants respectfully traverse the rejection.

### I. TEACHING AWAY: IMPROPER REFERENCE COMBINATION

M.P.E.P. § 2145(X)(D)(2) clearly states that "[i]t is improper to combine references where the references teach away from their combination." Applicants respectfully submit that Hilbert, Miyazaki and Siwiak were improperly combined.

#### A. Hilbert and Siwiak

For example, Hilbert and Siwiak were improperly combined because they teach away from each other. Siwiak teaches a radio frequency transceiver having a power amplifier as illustrated in FIG. 9. At col. 5, lines 42-50, for example, Siwiak teaches that an amplified RF signal is mixed by mixer 506 with a signal produced by a local oscillator 508, resulting in an intermediate frequency (IF) signal. The IF signal is then applied to an IF filter 510 and then applied to a detector 512 for producing a demodulated signal. Thus, Siwiak teaches a heterodyne architecture that down-converts only to an IF band.

Hilbert entirely teaches away from down-converting to an IF band in a radio communication system. For example, at col. 2, lines 12-20, Hilbert teaches that

... [a] drawback to the heterodyne architecture is that the conversion to an IF requires extra circuit complexity, more power consumption, and more physical space. The filters used are usually ceramic filters or surface acoustic wave (SAW) filters, which are both expensive and physically large.

To circumvent the drawbacks of a heterodyne architecture, a direct conversion architecture is employed. In a direct conversion architecture, there is no IF.

Hilbert teaches that its invention "provides receiver and transmitter circuitry including an RF quadrature signal generator for dividing the frequency of an RF signal in half and generating a pair of RF signals in phase quadrature suitable for a *direct conversion* radio transceiver." Hilbert

at col. 5, lines 46-50 (emphasis added). In another example, at col. 7, lines 13-17, Hilbert teaches that

[i]n the direct conversion receiver, the modulated receive signal detected at antenna 301 is not first converted to an IF signal. Directly converting the modulated receive signal to a baseband signal thereby circumvents the need for costly, physically large IF filters.

In yet another example, at col. 8, lines 42-46, Hilbert teaches that

[t]he transmit baseband signals are not converted to an IF signal before ultimately being transmitted from antenna 301. Directly converting the transmit baseband signals to the transmit electromagnetic signal frequency circumvents the need for costly, physically large IF filters.

Thus, Hilbert teaches away from Siwiak, thereby teaching away from the combination of Hilbert with Siwiak. See, e.g., M.P.E.P. § 2145(X)(D)(2). Accordingly, Hilbert cannot be properly combined with Siwiak.

Since Hilbert cannot be properly combined with Siwiak, the Examiner cannot maintain an obviousness rejection of claims 1-26 based on the combination of Hilbert, Miyazaki and Siwiak.

#### **B. Hilbert and Miyazaki**

In another example, Hilbert and Miyazaki were improperly combined because they teach away from each other. Miyazaki teaches an overdrive circuit that is separate and external to the circuit for which an overdrive current is provided. As is evident from Miyazaki, every embodiment illustrated in FIGS. 1, 3-5 and 8 separates the overdrive circuit from the external circuit for which an overdrive current is provided via an IC terminal T1. The external circuit includes a transistor QNT1 or QPT1 with a base connected to the overdrive circuit through the overdrive circuit's IC terminal T1.

On the other hand, Hilbert teaches away from using the overdrive circuit which is external to the circuit for which overdrive circuit is provided. Instead, Hilbert teaches a quadrature generator 320, 370 including a variable phase shift network 420 in which the quadrature generator 320, 370 is integrated into a custom integrated circuit. See, e.g., Hilbert at FIGS. 4 and 8. For example, at col. 5, lines 6-12, Hilbert teaches that

... there is further need for a quadrature generator having a variable phase shift network that splits a signal into components whose phase is varied about ideal

quadrature, that has a sensitivity range large enough to cover the make tolerances of all the elements determining an absolute phase shift to permit integration of the quadrature generator on a *custom integrated circuit* ....

Hilbert at col. 5, lines 6-12 (emphasis added). In another example, at col. 11, lines 24-36 and FIG. 8, Hilbert teaches that

... [t]o overcome the problems in the prior art, the variable phase shift network 420 controls an emitter resistance of an NPN transistor to vary phase shifts and receives differential input signals. The emitter resistance of an NPN transistor permits a sensitivity range large enough to cover the make tolerances of all the elements determining an absolute phase shift to permit *integration* of the quadrature generator on a *custom integrated circuit* and permits a wide range of operating frequencies. The differential input signals overcomes the imbalance created by single-ended signals. By constructing the entire variable phase shift network 420 on an *integrated circuit no external parts are required*.

Hilbert at col. 11, lines 24-36 (emphasis added). In yet another example, at col. 13, lines 3-9, Hilbert teaches that

[t]he variable phase shift network 420 addresses the need for a quadrature generator having a variable phase shift network that splits a signal into components whose phase is varied about ideal quadrature and that has a sensitivity range large enough to cover the make tolerances of all the elements determining an absolute phase shift to permit *integration* of the quadrature generator on a *custom integrated circuit* ....

Hilbert at col. 13, lines 3-9 (emphasis added).

Thus, Hilbert teaches away from Miyazaki, thereby teaching away from the combination of Hilbert with Miyazaki. See, e.g., M.P.E.P. § 2145(X)(D)(2). Accordingly, Hilbert cannot be properly combined with Miyazaki.

Since Hilbert cannot be properly combined with Miyazaki, the Examiner cannot maintain an obviousness rejection of claims 1-26 based on the combination of Hilbert, Miyazaki and Siwiak.

### C. Siwiak and Miyazaki

In yet another example, Siwiak and Miyazaki were improperly combined because they teach away from each other. The Examiner has added the capacitors of Siwiak (i.e., in Siwiak, capacitors 126 and 206 as set forth in FIGS. 4 and 6, respectively) to a variable phase shift network of Hilbert (i.e., in Hilbert, a variable phase shift network 420 as set forth in FIG. 8).

However, Miyazaki teaches away from adding capacitors to a circuit. In fact, the intended purpose of Miyazaki is to eliminate the capacitors in prior art circuits. Applicants respectfully draw the attention of the Examiner to the prior art section (i.e., the Background of the Invention section) of Miyazaki which shows that previous circuits as set forth in FIGS. 5 and 8 of Miyazaki used a capacitor between IC terminals T1 and T2. However, Miyazaki eliminated the capacitor in its invention as set forth in FIGS. 1 and 3. In another example, at col. 7, lines 50-53, Miyazaki teaches that "[t]he overdrive current can be supplied to the switching element ... *without* using the charge-discharge current of the capacitor". Miyazaki at col. 7, lines 50-53 (emphasis added).

Thus, Miyazaki teaches away from Siwiak, thereby teaching away from the combination of Miyazaki with Siwiak. See, e.g., M.P.E.P. § 2145(X)(D)(2). Accordingly, Miyazaki cannot be properly combined with Siwiak.

Since Miyazaki cannot be properly combined with Siwiak, the Examiner cannot maintain an obviousness rejection of claims 1-26 based on the combination of Hilbert, Miyazaki and Siwiak.

#### **D. Conclusion**

For at least the above reasons, Applicants respectfully submit that, since (1) Hilbert was improperly combined with Siwiak, (2) Hilbert was improperly combined with Miyazaki and (3) Siwiak was improperly combined with Miyazaki, the Examiner cannot maintain a rejection based on the combination of Hilbert, Miyazaki and Siwiak. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103(a) be withdrawn with respect to claims 1-26.

## **II. PRIMA FACIE OBVIOUSNESS**

Applicants respectfully submit that, for at least the above reasons, the Examiner has not met the burden of proof necessary to maintain a *prima facie* case of obviousness. M.P.E.P. § 2142 states that

[t]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

Furthermore, Applicants respectfully request that the Examiner discuss each and every element as set forth by the claims. For example, with respect to claim 1, although the Examiner

has alleged that Hilbert describes a logic circuit having a power input and a power return, the Examiner has failed to identify with particularity, for example, the power input and the power return in the variable phase shift network 420 of FIG. 8 in Hilbert, which was cited by the Examiner. Moreover, although the Examiner has alleged that Hilbert describes a first resistor having a first end coupled to a power input and a second end to couple to a power source, the Examiner has failed to identify with particularity, for example, the power input and the power source in the variable phase shift network 420 of FIG. 8 in Hilbert. In addition, although the Examiner has alleged that Hilbert describes a second resistor having a first end coupled to a power return and a second end to couple to a power source return, the Examiner has failed to identify with particularity, for example, the power return and the power source return. Applicants respectfully request that the Examiner specifically identify at least a power input, a power return, a power source and a power source return in any documents cited by the Examiner in support of any rejection.


### III. CONCLUSION

In view of at least the foregoing, it is respectfully submitted that the pending claims 1-26 are in condition for allowance. Should anything remain in order to place the present application in condition for allowance, the Examiner is kindly invited to contact the undersigned at the below-listed telephone number.

Please charge any required fees not paid herewith or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

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Respectfully submitted,

  
Michael T. Cruz  
Reg. No. 44,636

McAndrews, Held & Malloy, Ltd.  
500 West Madison Street, 34th Floor  
Chicago, Illinois 60661-2565  
Telephone: (312) 775-8084  
Facsimile: (312) 775-8100